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# RANKING OF ELECTRICITY ACCUMULATION POSSIBILITIES: A MULTICRITERIA ANALYSIS

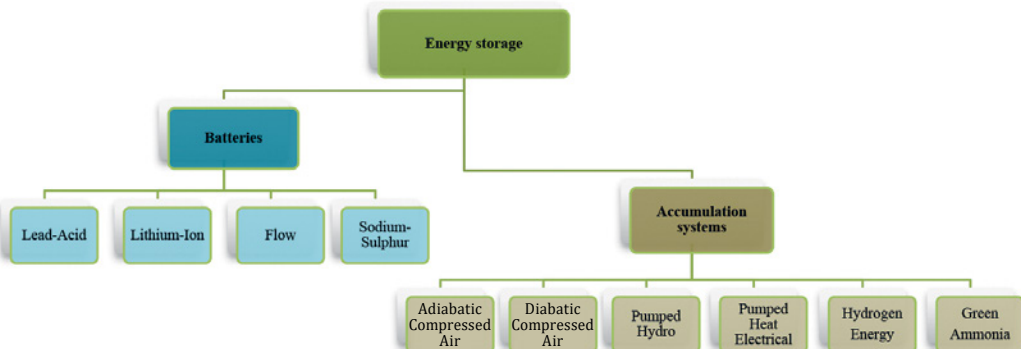
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**Abstract** – The pace of implementation of renewable electricity storage in Europe is disappointingly slow due to several factors. There is a need to speed up the rate and increase the volumes in order to promote a 100 % transition to renewable energy resources, expand the practice of using renewable energy, and contribute to the improvement of the user's quality of life. In addition, a significant reduction of the global impact on the environment and climate change is an important factor. Electricity from renewable energy sources, such as the sun and wind, has a seasonal nature that cannot provide the necessary electricity for consumption and cannot cover peak loads. Also, the so-called 'energy resource crisis' is a topical issue, which reinforces the global need to increase the share of renewable energy resources in the overall balance of primary energy resources. It is precisely the wider integration of renewable electricity storage in practice that can help stimulate this. The availability of renewable electricity is constantly increasing, and the level of technological innovation is rapidly developing. Therefore, it is crucial to analyse both phenomena and actively search for overlaps in developing technologies, not forgetting the main differences in the types of accumulation, to promote accessibility, starting from a private house to the national and European scale. This article analyses and compares the options for renewable electricity storage – from small batteries to large storage systems. The authors consider the best solutions to satisfy individual and collective needs of the consumer. In this article, a multicriteria decision analysis (MCDA) and TOPSIS are used as analysis tools. After comparing nine criteria, such as the investment required, existing power density, efficiency, duration of operation, and others, in both groups, it is concluded that lithium-ion batteries are currently the best solution among batteries; while in the group of large accumulation systems pumped hydro storage secures a superior position.

**Keywords** – Energy; decision making analysis; innovations; TOPSIS; renewable; storage



Compared electricity storage technologies.